

Common Atmospheric Pollutants + Sources

Mark Scheme 1

Level	GCSE (9-1)
Subject	Combined Science: Trilogy - Chemistry
Exam Board	AQA
Topic	5.9 Chemistry of the Atmosphere
Sub-Topic	Common Atmospheric Pollutants + Sources
Difficulty Level	Bronze Level
Booklet	Mark Scheme 1

Time Allowed: 57 minutes

Score: /57

Percentage: /100

Grade Boundaries:

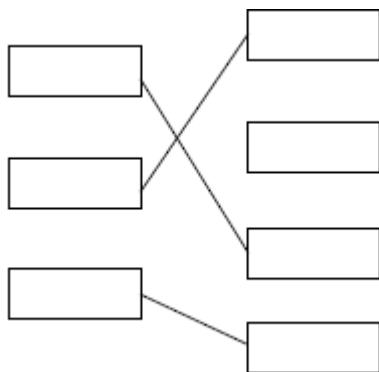
M1.(a)	Colourless liquid / condensation / water	1	
	(b) incomplete combustion of the fuel	1	
	because not enough oxygen	1	
	(c) Sulfur dioxide	1	[4]
M2.(a)	(i) mixture (of different substances)	1	
	(ii) boiling (points)	1	
	(iii) distillation	1	
	(b) (i) combustion	1	
	(ii) (reactant)		
	oxygen		
	<i>allow correct formulae</i>	1	
	(products)		
	<i>products in any order</i>		
	carbon dioxide		
	<i>allow carbon or carbon monoxide</i>		
	and		
	water		
	<i>allow water vapour or steam or hydrogen oxide</i>		

		1
	(iii) (burning sulfur) produces sulfur dioxide / SO_2 <i>allow it / sulfur reacts with oxygen ignore sulfur oxide</i>	1
	causes acid rain	1
(c)	(i) propane is a fuel	1
	(ii) double bond drawn between carbon atoms <i>do not allow any other bonds or symbols</i>	1
	(iii) orange to colourless	1
	(iv) poly(pentene) <i>allow polymer(s)</i>	1
		[12]
M3.	(a) good (electrical) conductor <i>allow low reactivity / resistance to corrosion</i> <i>do not accept <u>heat conductor</u></i>	1
	(b) a mixture of metals <i>accept contains more than one type of metal</i>	1
(c)	(i) any one from: <ul style="list-style-type: none">• eyesore• destruction of <u>habitats</u>• pollution of water• dust pollution• noise	

		<ul style="list-style-type: none">• traffic pollution	1
	(ii)	acid rain <i>allow sulfur dioxide is a pollutant</i>	1
(d)	(i)	running out of copper (ores)	1
	(ii)	any two from: <ul style="list-style-type: none">• any <u>specific example</u> of using less copper• reuse / recycle <i>allow do not throw copper / brass away</i>• use low-grade copper ores• use other metals / materials in place of copper	2
M4.	(a)	(i) sulfur dioxide / SO ₂	1
		(ii) global dimming	1
		(iii) carbon dioxide / CO ₂ <i>ignore ozone</i>	1
		increases the levels (of carbon dioxide) <i>accept it is a greenhouse gas or causes global warming / greenhouse effect</i>	1
	(b)	gas / oil bar <u>correct length</u>	1
		coal bar <u>correct length</u>	

[6]

M5.(a)	(i)	a proton	1
	(ii)	nucleus	1
	(iii)	12 <i>order must be correct</i>	1
		4	1
(b)	(i)	5 / five (%)	1
	(ii)	Carbon dioxide > global warming	1
		Sulfur dioxide > acid rain	1
		Water > no pollution	



1

[8]

M6. (a) (i) bar drawn between 84 and 86

1

(ii) sulfur dioxide linked to acid rain

1

carbon particles linked to global dimming

1

(b) (i) any **one** from:

- plants / trees absorb (carbon dioxide)
- coal 'locks up' (carbon dioxide)

1

(ii) it increases the amount (of CO₂)

1

because carbon in coal (forms carbon dioxide)

accept because carbon / coal burns / reacts with oxygen (to produce CO₂)

1

[6]

- M7.** (a) sulfur dioxide / SO₂
allow sulfur oxide 1
- (b) global dimming 1
- (c) oxygen / O₂ 1
- (d) (oil is a) limited resource / finite / non-renewable
accept running out of oil or wood is sustainable
accept (burning oil) increases amount of carbon dioxide in the atmosphere / global warming or releases locked up carbon / global dimming / acid rain
accept the oil (may become) too expensive 1
- (e) carbon dioxide produced (from burning wood)
ignore global warming 1
- carbon dioxide used by plants / trees **or** for photosynthesis
if no other mark awarded
allow carbon emissions used by plants / trees or for photosynthesis for 1 mark 1
- [6]

- M8.** (a) acid rain → sulfur dioxide 1

- global warming → carbon dioxide 1
- global dimming → carbon particles 1
- (b) (i) oxygen 1
- (ii) carbon monoxide 1
- (c) (i) decreasing
accept running out / none left 1
- (ii) any **two** from:
it = coal
- world needs (more) energy
accept population is increasing
allow (greater) demand for coal / fuels / energy
 - plentiful supply
accept readily available
allow coal will 'last longer'
 - (many) countries have coal
 - easy to find / extract
 - oil / gas is running out
accept need to use less oil / gas
accept need to use it to replace oil / gas
 - cheap **or** cheaper than oil

2

[8]

